CLAIMS

1. A DNA molecule comprising an expression system capable, when transformed into a recombinant host, of producing the C140 receptor at the cell surface of the host, which expression system comprises a nucleotide sequence encoding the C140 receptor operably linked to a control sequence heterologous to said encoding nucleotide and operable in said host cell.

2. A cell modified to contain the expression system of claim 1.

3. A method to produce cells that contain C140 receptor deployed at their surface, which method comprises culturing the cells of claim 2 under conditions which effect the expression of the nucleotide sequence encoding the C140 receptor to obtain said cells that contain C140 receptor deployed at their surface.

4. A cRNA molecule that encodes the C140 receptor.

5. Cells which are oocytes modified to contain the cRNA of claim 4.

6. A method to produce cells which are oocytes that contain C140 receptor deployed at their surface, which method comprises culturing the oocytes of claim 5 under conditions which effect the expression of

the cRNA encoding the C140 receptor to obtain said cells that contain C140 receptor deployed at their surface.

7. A method to determine the C140 agonist activity of a candidate substance, which method comprises:

incubating the cells of claim 3 or 6 in the presence and absence of the substance, and

detecting the presence, absence or amount of activation of the C140 receptor in the presence as compared to the absence of said substance whereby an increase in said activation in the presence as compared to the absence of said substance indicates agonist activity of the substance.

8. A method to assess the ability of a candidate substance to behave as a C140 antagonist, which method comprises:

incubating the cells of claim 3 or 6 in the presence of a C140 agonist and in the presence and absence of said candidate, and

measuring the activation of the C140 receptor in the presence and absence of said candidate, whereby a decrease in said activation in the presence of the candidate indicates the antagonist activity of the candidate.

9. A method to assess the ability of a candidate substance to bind to C140 receptor, which method comprises:

incubating the cells of claim 3 or 6 in the presence of a C140 agonist or a known C140 antagonist and in the presence and absence of said candidate, and

measuring the binding of said C140 agonist or C140 antagonist to the surface of said cells in the presence and absence of said candidate, whereby a decrease in said binding in the presence of the candidate indicates the ability of the candidate to bind receptor.

10. An antibody composition specifically immunoreactive with an extracellular region of the C140 receptor protein or a portion thereof.

11. The antibody composition of claim 10 wherein said region is the ligand-binding region, or

which is specifically immunoreactive with activated C140 receptor, or

recognizes an epitope within the receptor sequence SLIGRL, or

is specifically reactive with the cleaved activation peptide of the C140 receptor.

12. A method to localize activated C140 receptors *in situ*, which method comprises:

administering to a subject putatively harboring activated C140 receptor an amount of antibody specific to said activated receptor effective to bind to said activated receptor, and

detecting the location of said antibody.

13. A method for detecting the presence of activated C140 receptor in a mammalian subject, which method comprises:

contacting a sample of the biological fluid of said subject with a detection system which measures the presence, absence or amount of the cleaved activation peptide of the C140 receptor; and

detecting the presence, absence or amount of said cleaved peptide.

14. An agonist peptide capable of activating C140 receptor, which peptide is of the formula

$$AA_1\text{-}AA_2\text{-}AA_3\text{-}AA_4\text{-}AA_5\text{-}AA_6\text{-}AA_7\text{-}Z \qquad (1)$$

wherein AA_1 is a small amino acid or threonine;

AA_2 and AA_3 are each independently neutral/nonpolar/large/nonaromatic amino acids;

AA_4 is a small amino acid;

AA_5 is a basic amino acid;

AA_6 may be present or absent and, if present, is a neutral/nonpolar/large/nonaromatic amino acid;

AA_7 is absent if AA_6 is absent and may be present or absent if AA_6 is present, and is an acidic amino acid; and

Z is a substituent that does not interfere with agonist activity.

15. The peptide of claim 14 wherein AA_1 is ser, ala, gly, thr, or 2,3-diamino-propionic (2,3-diaP); and/or

wherein each of AA_2 and AA_3 is independently selected from the group consisting of ile, val, leu, and Cha; and/or

wherein AA_4 is Gly; and/or

wherein AA_5 is Arg, Lys or Har; and/or

wherein Z comprises OR', or NR'R' wherein each R' is independently H or is a straight or branched chain alkyl or 1-6C, wherein each R' may optionally be substituted with one or more substituents selected from the group consisting of -OR', -NR'R', and -NR'CNR'NR'R' wherein each R' is H or is a straight or branched chain alkyl of 1-6C.

16. The peptide of claim 15 wherein AA_1-AA_2-AA_3 is selected from the group consisting of SLI, SLL, SChaI, SChaL, (2,3-diaP)LI and (2,3-diaP)LL; and/or

wherein Z includes additional peptide sequence of 1-5 amino acids.

17. The peptide of claim 14 which is selected from the group consisting of SLIGRLETQPPIT, SLIGRLETQPPI, SLIGRLETQPP, SLIGRLETQP, SLIGRLETQ, SLIGRLET, SLIGRLE, SLIGRL, SLIGR, SLLGKVDGTSHVT, SLLGKVDGTSHV, SLLGKVDGTSH, SLLGKVDGTS, SLLGKVDGT, SLLGKVDG, SLLGKVD, SLLGKV, SLLGK, S(Cha)IGR, S(Cha)LGK, (2,3-diaP)-LIGR, (2,3-diaP)LLGK, SLLGKR-NH_2, SLIGRR-NH_2, S(Cha)LGKK-NH_2, S(Cha)IGRK-NH_2, (2,3-diaP)-LIGRK-NH_2, and (2,3-diaP)-LLGKK-NH_2.

18. A peptide capable of inhibiting the function of the C140 receptor which peptide is of the formula

$$X\text{-}AA_2\text{-}AA_3\text{-}AA_4\text{-}AA_5\text{-}AA_6\text{-}AA_7\text{-}Z$$

wherein X is an amino acid residue other than ser, ala, thr, cys, 2,3-diaP or gly or is a desamino or acylated amino acid,

wherein AA_2 and AA_3 are each independently neutral/nonpolar/large/nonaromatic amino acids;

AA_4 is a small amino acid;

AA_5 is a basic amino acid;

AA_6 may be present or absent and, if present, is a neutral/nonpolar/large/nonaromatic amino acid;

AA_7 is absent if AA_6 is absent and may be present or absent if AA_6 is present, and is an acidic amino acid; and

Z is a substituent that does not interfere with agonist activity.

19. The peptide of claim 18 wherein X is Mvl, Mpr, Mba, or SMeMpr; and/or

wherein each of AA_2 and AA_3 is independently selected from the group consisting of ile, val, leu, Nle, Nva, Cyclopentylalanine and Cha; and/or

wherein AA_4 is Gly; and/or

wherein AA_5 is Arg, Lys, Orn or Har; and/or

wherein Z comprises OH or an ester or salt thereof, or NR'R' wherein each R' is independently H or is

a straight or branched chain alkyl of 1-6C, wherein each R' may optionally be substituted with one or more substituents selected from the group consisting of -OR', -NR'R', and -NR'CNR'NR'R' wherein each R' is H or is a straight or branched chain alkyl of 1-6C.

20. The peptide of claim 19 wherein AA_2-AA_3 is selected from the group consisting of LI, LL, ChaI, and ChaL; and/or

wherein Z includes a peptide extension of 1-5 amino acid residues.

21. The peptide of claim 18 which is selected from the group consisting of Mpr-LLGK, Mpr-LIGR, Mpr-(Cha)LKG, Mpr-(Cha)IGR, Mpr-LLGKK-NH_2, Mpr-LIGRK-NH_2, Mpr-LIGRKETQP-NH_2, Mpr-LLGKKDGTS-NH_2, (n-pentyl)$_2$-N-Leu-Ile-Gly-Arg-Lys-NH_2 and (Me-N-(n-pentyl)-Leu-Ile-Gly-Arg-Lys-NH_2, and the amidated or acylated forms thereof.

22. An isolated nucleic acid molecule which encodes a C140 receptor polypeptide or which is complementary to a DNA or RNA molecule encoding a C140 receptor polypeptide.

23. The nucleic acid molecule of claim 22 wherein said C140 receptor is the human C140 receptor.

24. A method to inhibit expression of C140 receptors in a cell comprising providing to said cell an oligonucleotide molecule which is antisense to, or forms a triple helix with, C140 receptor-encoding DNA or with DNA regulating expression of C140 receptor-encoding DNA, in an amount sufficient to inhibit expression of said C140 receptors, thereby inhibiting said expression.

25. A method to inhibit expression of C140 receptors in a subject, comprising administering to said subject an oligonucleotide molecule which is antisense to, or forms a triple helix with, C140 receptor-encoding DNA or with DNA regulating expression of C140 receptor-encoding DNA, in an amount sufficient to inhibit expression of said C140 receptors in said subject, thereby inhibiting said expression.

26. A pharmaceutical composition comprising an oligonucleotide molecule of claim 25 together with a pharmaceutically acceptable carrier or excipient.